

Notice of Allowability

Application No.

10/718,075

Examiner

Patricia C. Mallari

Applicant(s)

BRAIG, JAMES R.

Art Unit

3736

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the application filed 11/20/03.
2. ☒ The allowed claim(s) is/are 1-14.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 2/27/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Information Disclosure Statement

The information disclosure statement filed 2/27/04 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

The drawings filed on 4/19/04 are acceptable subject to correction of the following informalities:

The quality of figure 11 makes it impossible to discern the features of the figure.

In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

On line 2 of claim 14, "received" was replaced with --receive--.

The above change corrects a typographical error in the claim.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

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The prior art of record fails to teach or fairly suggest a method or apparatus for determining a user's resting respiratory quotient (RQ) wherein the user's RQ is determined in accordance with the following equation:

$$RQ = (ETCO_2 - INS CO_2) / (INS O_2 - ETCO_2), \text{ where}$$

$ETCO_2$ = the user's real-time end-tidal concentration

$INS CO_2$ = the user's real-time inspired carbon dioxide concentration

$INS O_2$ = the user's real-time inspired oxygen concentration, and

ETO_2 = the user's real-time end-tidal oxygen concentration, as claimed. US Patent No. 4,463,764 to Anderson et al. and US Patent No. 5,060,656 to Howard represent the most relevant prior art.

Binder teaches a device comprising a mouthpiece 3 adapted to receive gases inspired by a user and gases exhaled by a user (col. 4, lines 8-10; fig. 1 of Binder). A carbon dioxide sensor 11 measures the user's real-time inspired carbon dioxide concentration ($INS CO_2$) and end tidal carbon dioxide ($ET CO_2$) concentration (col. 4, lines 30-34 and lines 51-53; col. 5, line 34-col. 6, line 14; col. 10, lines 8-15 of Binder). An oxygen sensor 10 measures the user's real-time inspired oxygen concentration ($INS CO_2$) and end tidal oxygen ($ET CO_2$) concentration (col. 4, lines 26-30 and lines 51-53; col. 5, lines 5-30; col. 10, lines 6-15 of Binder). A processor 105 determines the user's respiratory exchange ratio R proportional to the ratio of carbon dioxide produced to the oxygen consumed (col. 8, lines 7-13 of Binder) which is the user's respiratory quotient (see paragraph 0062 of US Patent Application Publication 2004/0186389 to Mault et al.; col. 4, lines 37-43 of US Patent NO. 6,042,550 to Haryadi et al.; col. 5, lines 45-50 of

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US Patent No. 6,699,202 to Gambert et al.) The user's carbon dioxide production and oxygen consumption are based on instantaneous flow rates and differential oxygen (between inspired and expired) and differential carbon dioxide concentration values, but do not depend upon end tidal concentrations. An airway tube 13 is connected to the mouthpiece 3 so as to direct exhaled gases to the carbon dioxide sensor and oxygen sensor for measurement (fig. 1; col. 4, lines 22-34 of Binder). However, Binder uses a mouthpiece in place of a mask and fails to determine the user's RQ in accordance with the equation: $RQ = (ETCO_2 - INS CO_2) / (INS O_2 - ETCO_2)$, as claimed by claims 1, 10, and 14 of the instant application.

Regarding claim 14, US Patent No. 5,060,656 to Howard discloses an apparatus for determining a user's respiratory quotient (col. 19, lines 3-5 of Howard), wherein either a mouthpiece or a mask may be used to acquire gases from a user. While it would have been obvious to one of ordinary skill in the art at the time of invention to use a mask in place of the mouthpiece of Binder, since Howard teaches the two as being functionally equivalent, such a change would still fail to teach a method or apparatus for determining a user's respiratory quotient based on inspired and end-tidal concentration of oxygen and carbon dioxide, as claimed.

Howard discloses a method of determining a user's respiratory quotient (RQ) wherein the RQ is determined according to the ratio of carbon dioxide production per minute and oxygen consumption per minute (col. 18, lines 3-8 and lines 56-60; col. 19, lines 3-5 of Howard). The carbon dioxide production per minute is calculated from the rate of air expiration and percent of carbon dioxide in each of expired and inspired air

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(col. 18, lines 56-63 of Howard). Oxygen consumption per minute is calculated from the rate of air inspiration, rate of air expiration, and the percent of oxygen in each of expired and inspired air (col. 18, lines 4-8 of Howard). None of the calculations specifically involve end-tidal concentrations of oxygen and/or carbon dioxide.

Therefore, no prior art exists teaching an apparatus or method for determining a user's resting respiratory quotient wherein the respiratory quotient is determined in accordance with the equation $RQ = (ETCO_2 - INS\ CO_2) / (INS\ O_2 - ETO_2)$, as claimed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. 4,463,764 to Anderson et al.

US Patent No. 5,003,985 to White et al.

US Patent No. 6,402,697 to Calkins et al.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

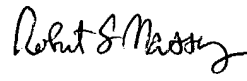
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia C. Mallari whose telephone number is (571) 272-4729. The examiner can normally be reached on Monday-Friday 10:00 am-6:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on (571) 272-4726. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Patricia Mallari
Patent Examiner
Art Unit 3736


ROBERT L. NASSER
PRIMARY EXAMINER